Fig. 1

Figure 1: Sample Protected Storage Grid deployment
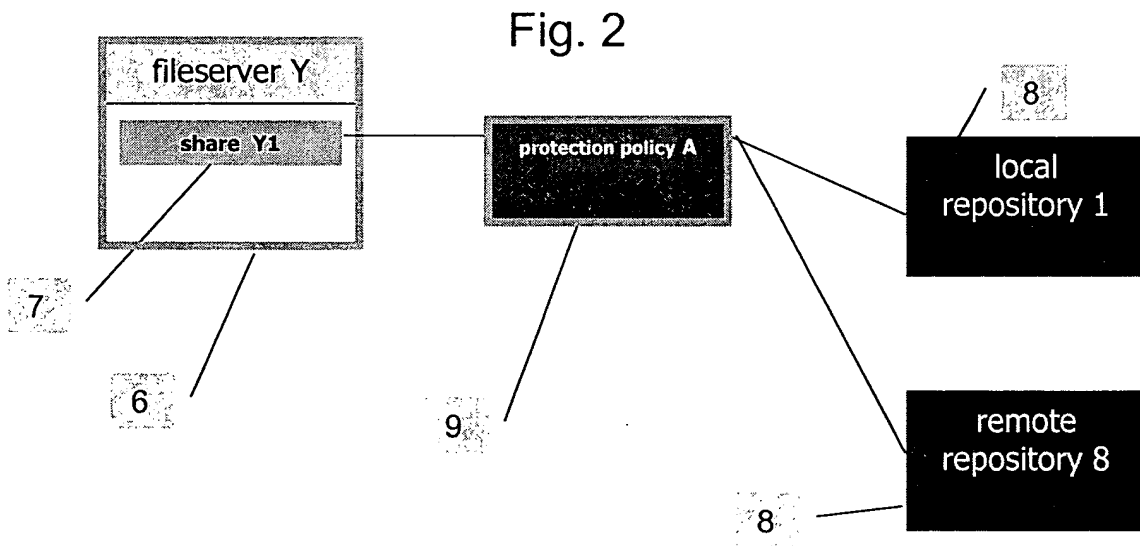
Fig. 2

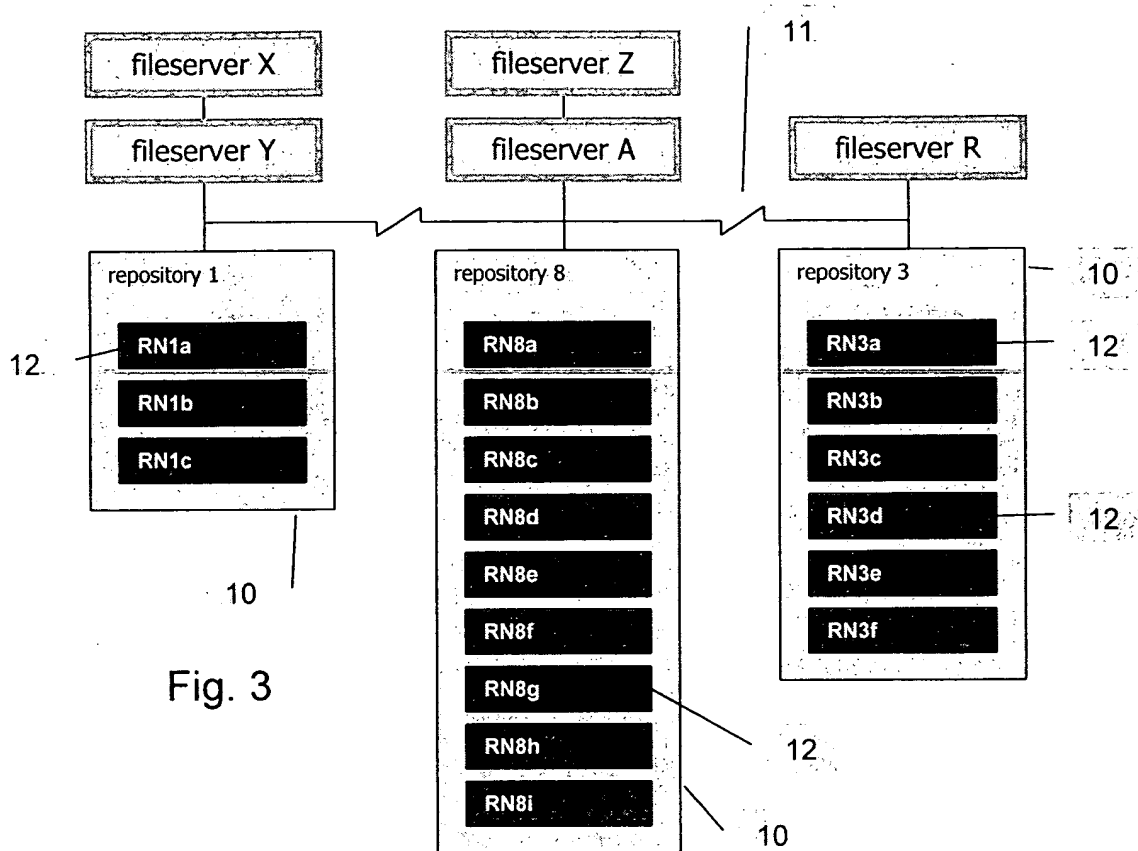Figure 2: Protection policy

| fileserver X | | fileserver Z | | |
| fileserver Y | | fileserver A | | fileserver R |

11

repository 1	repository 8	repository 3	10
RN1a	RN8a	RN3a	12
RN1b	RN8b	RN3b	
RN1c	RN8c	RN3c	
	RN8d	RN3d	12
	RN8e	RN3e	
	RN8f	RN3f	
	RN8g		
	RN8h		
	RN8i		

12

10

10

Fig. 3

12

FIG 3: Repository Nodes within Repositories

Fig. 4

General	
CIFS Sharing	
NFS Sharing	
FTP Sharing	
Protection Policy	

Policy Identification

Share: **GP_Marketing/Marcom2**

Protect this share: ☑

Protection Policy Name: marcom2

Description: 2 Local, 0 Remote

User Data: D135

Protection Management

Backup Frequency: 1 Hour ▾

Replicas: 2 ▾ Replicas in **New York/Hudson**

1 ▾ Replicas in New York/3 Charles ▾

0 ▾ Replicas in Boston ▾

Version Management

Keep Version History ☑

Version Compression: Delta Compression ▾

Version Compaction:
☑ Keep only one daily version after 7 days

☑ Keep only one weekly version after 4 weeks

☑ Keep only one monthly version after 12 months

☑ Keep only one version after 2 years

Advanced Options [Hide]

☐ Purge all versions of files that are deleted from this share 7 days after they are deleted.
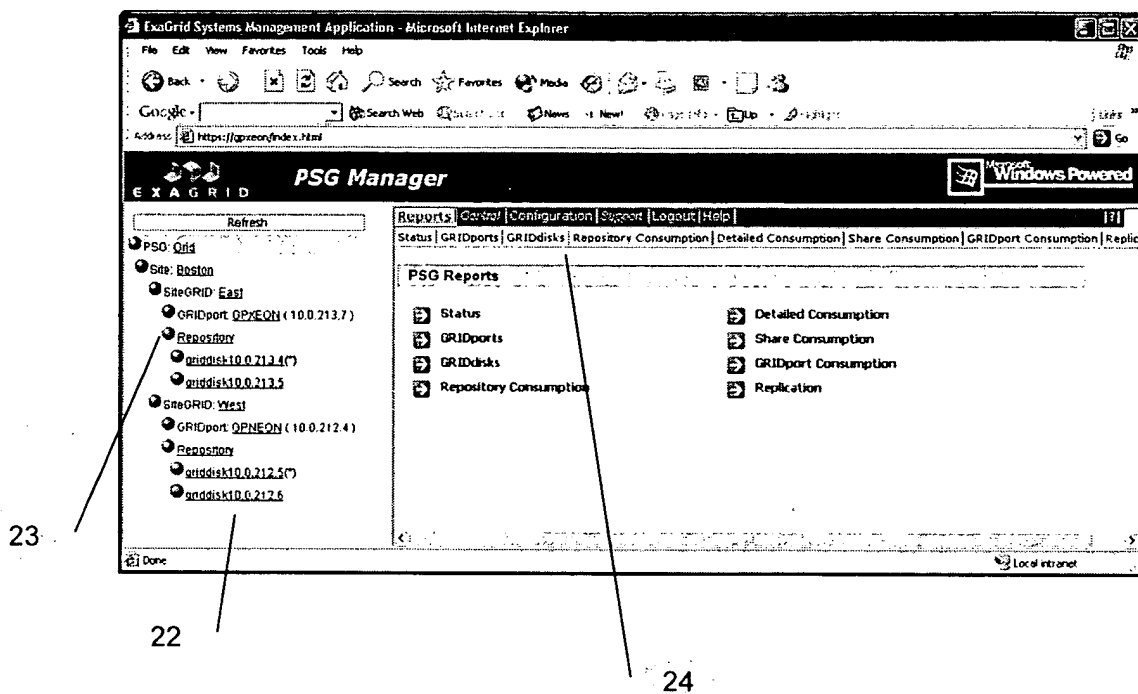
Caching Level: High ▾

FIG 4: Protection Policy

FIG 5

ExaGrid Systems Management Application - Microsoft Internet Explorer

File   Edit   View   Favorites   Tools   Help

Back · | Search | Favorites | Media | ...

Google · | Search Web | ... | News | ...

Address: https://gpxeon/index.html

EXAGRID   PSG Manager

Windows Powered

Refresh

PSO: Grid
Site: Boston
SiteGRID: East
GRIDport: GPXEON (10.0.213.7)
Repository
griddisk10.0.213.4(*)
griddisk10.0.213.5
SiteGRID: West
GRIDport: GPNEON (10.0.212.4)
Repository
griddisk10.0.212.5(*)
griddisk10.0.212.6

Reports | Control | Configuration | Support | Logout | Help |

Status | GRIDports | GRIDdisks | Repository Consumption | Detailed Consumption | Share Consumption | GRIDport Consumption | Replic.

PSG Reports

- Status
- GRIDports
- GRIDdisks
- Repository Consumption

- Detailed Consumption
- Share Consumption
- GRIDport Consumption
- Replication

Done   Local intranet

23   22   24

FIG 5: Web-based Management Application

FIG 6

EXAGRID   PSG Manager

Windows Powered

Refresh

PSO: Grid
Site: Boston
SiteGRID: East
GRIDport: GPXEON (10.0.213.7)
Repository
griddisk10.0.213.4(*)
griddisk10.0.213.5
SiteGRID: West
GRIDport: GPNEON (10.0.212.4)
Repository
griddisk10.0.212.5(*)
griddisk10.0.212.6

Reports | Control | Configuration | Support | Logout | Help |

Status | GRIDports | GRIDdisks | Repository Consumption | Detailed Consumption | Share Consumption | GRIDport Consumption | Rep

Share Consumption for PSG : Grid

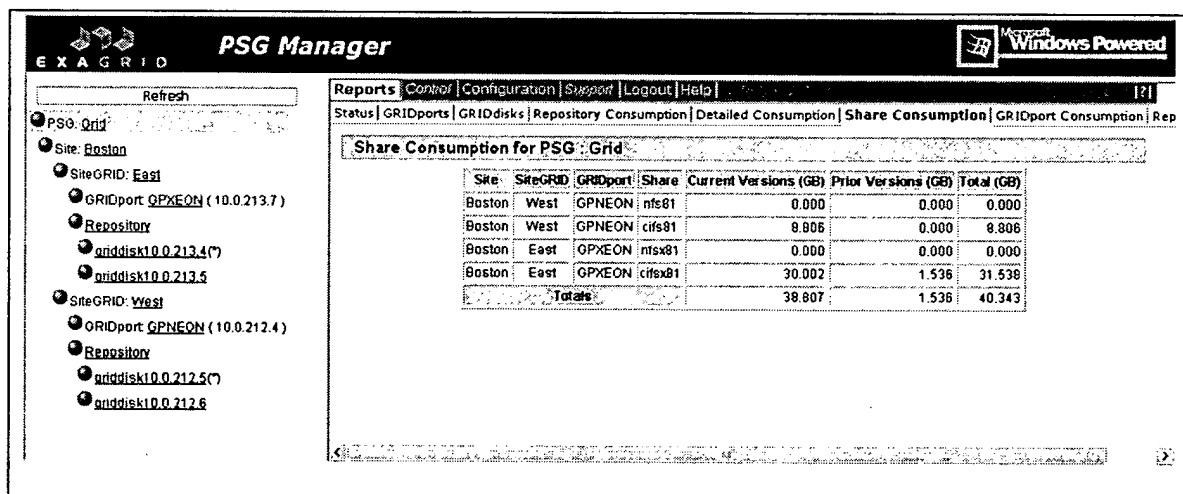| Site	SiteGRID	GRIDport	Share	Current Versions (GB)	Prior Versions (GB)	Total (GB)
Boston	West	GPNEON	nfs81	0.000	0.000	0.000
Boston	West	GPNEON	cifs81	8.806	0.000	8.806
Boston	East	GPXEON	nfsx81	0.000	0.000	0.000
Boston	East	GPXEON	cifsx81	30.002	1.536	31.538
		Totals		38.807	1.536	40.343

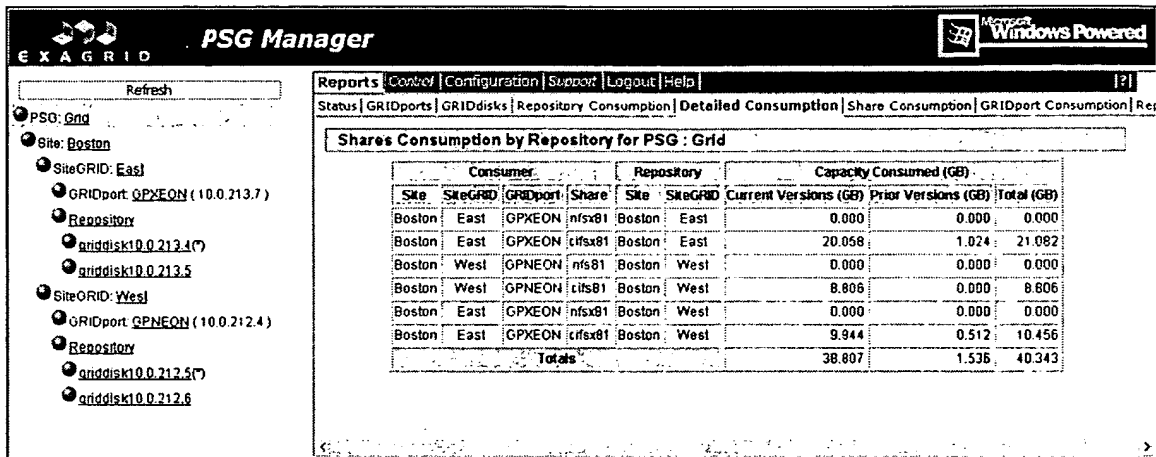FIG 6: Capacity per share chargeback reporting

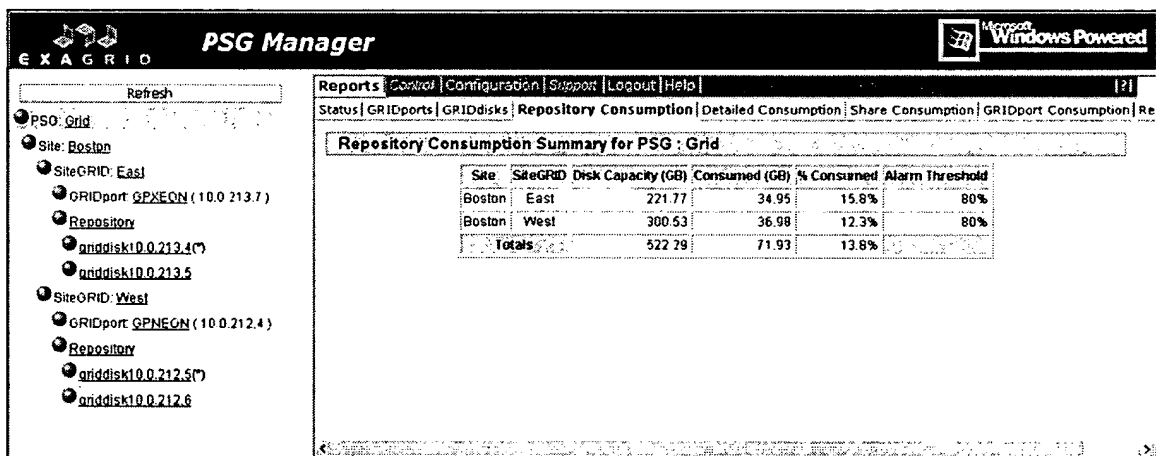FIG 7: Capacity per share per repository reporting

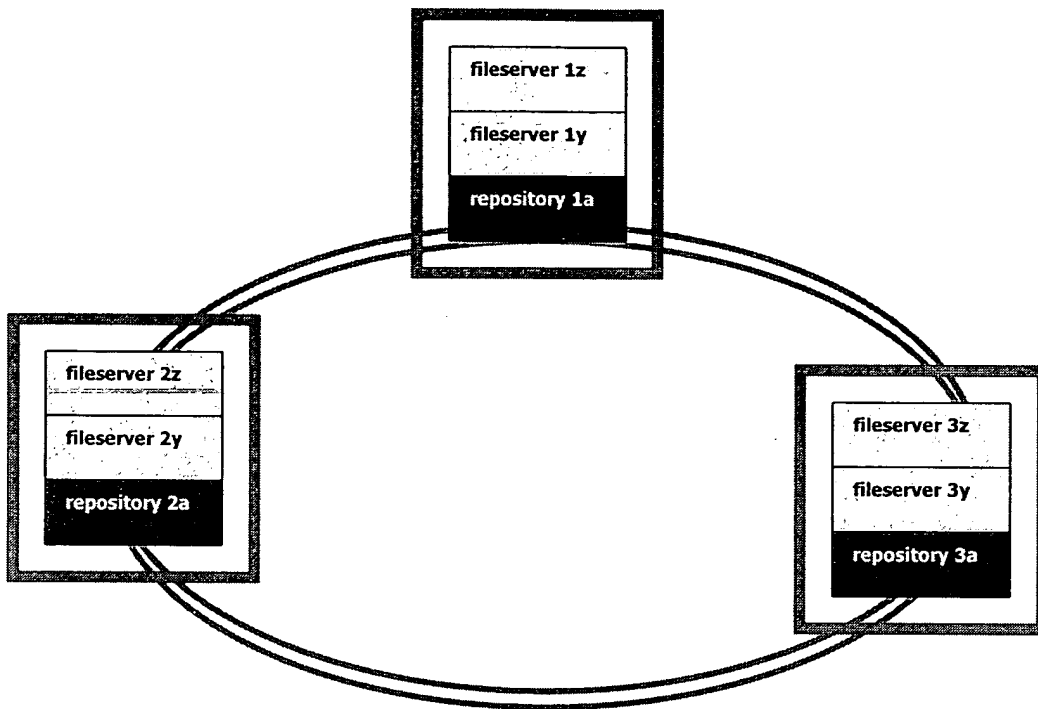FIG 8: Capacity per repository reporting

FIG 9: The present invention used as collection of distributed NAS
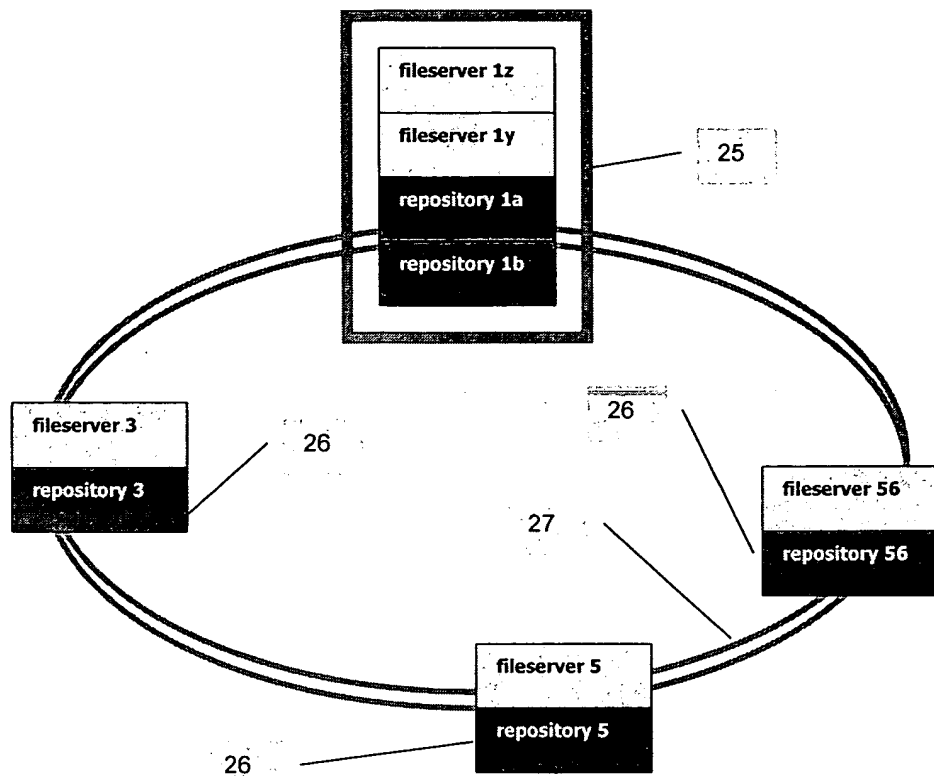servers, with complete local and remote data protection

FIG 10: The present invention used in a corporation with a centralized data center and multiple remote offices
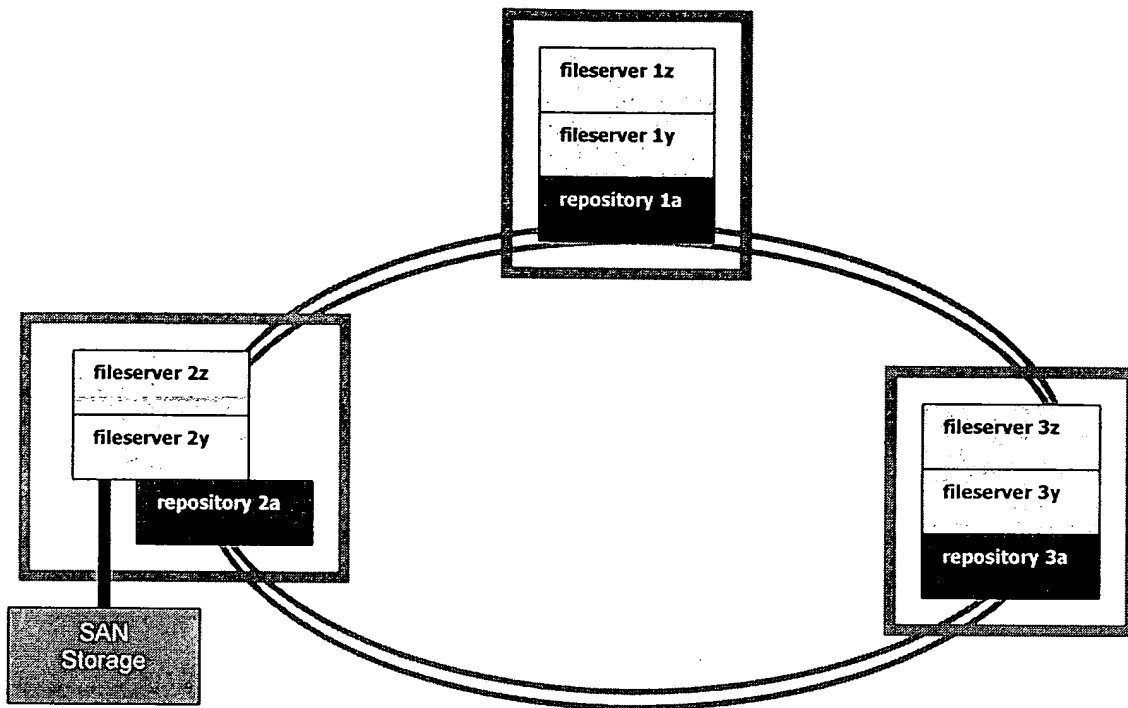
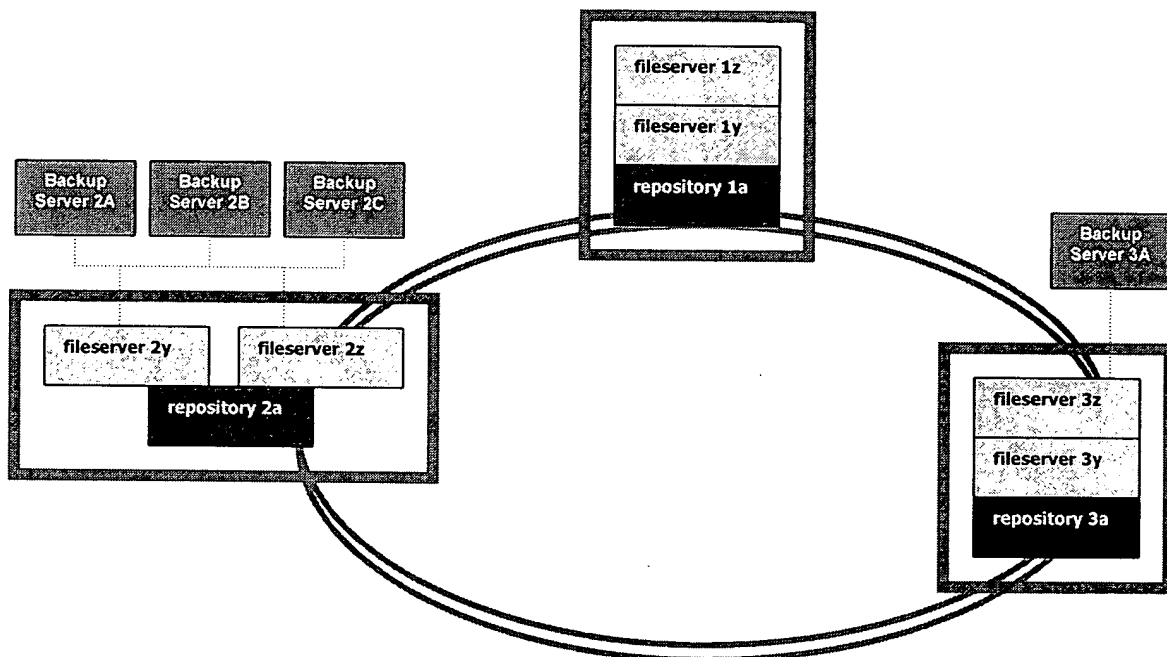FIG 11: The present invention used to provide tiered storage services for existing SAN storage

FIG 12: The present invention used as a replacement for tape drives and tape media for traditional backups
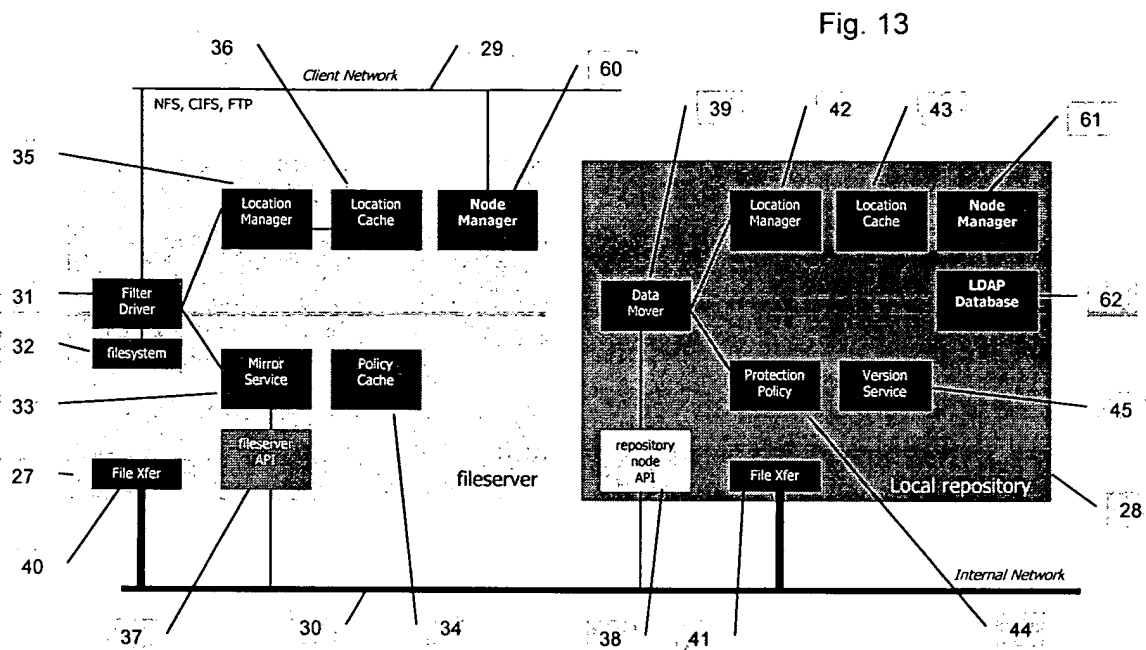
Fig. 13

36 Client Network 29 60

NFS, CIFS, FTP

35

39 42 43 61

| Location Manager | Location Cache | Node Manager |

31 Filter Driver

Data Mover

| Location Manager | Location Cache | Node Manager |

LDAP Database 62

32 filesystem

33 Mirror Service Policy Cache

Protection Policy Version Service 45

fileserver API

27 File Xfer

fileserver

repository node API

File Xfer Local repository

28

40

Internal Network

37 30 34 38 41 44

FIG 13: Apparatus and software components that are used to protect new client data to a local repository node

Fig. 14

70 71 57 58

50

| Location Manager | Location Cache | Node Manager | 70

54 Data Mover

Replicator Service

LDAP Database 71

| Location Manager | Location Cache | Node Manager |

Data Mover

LDAP Database 71

51 Protection Policy

Protection Policy Version Service 59

repository node API

52

File Xfer Local repository node

repository node API

File Xfer Remote repository node

Local Network VP VP Remote Network
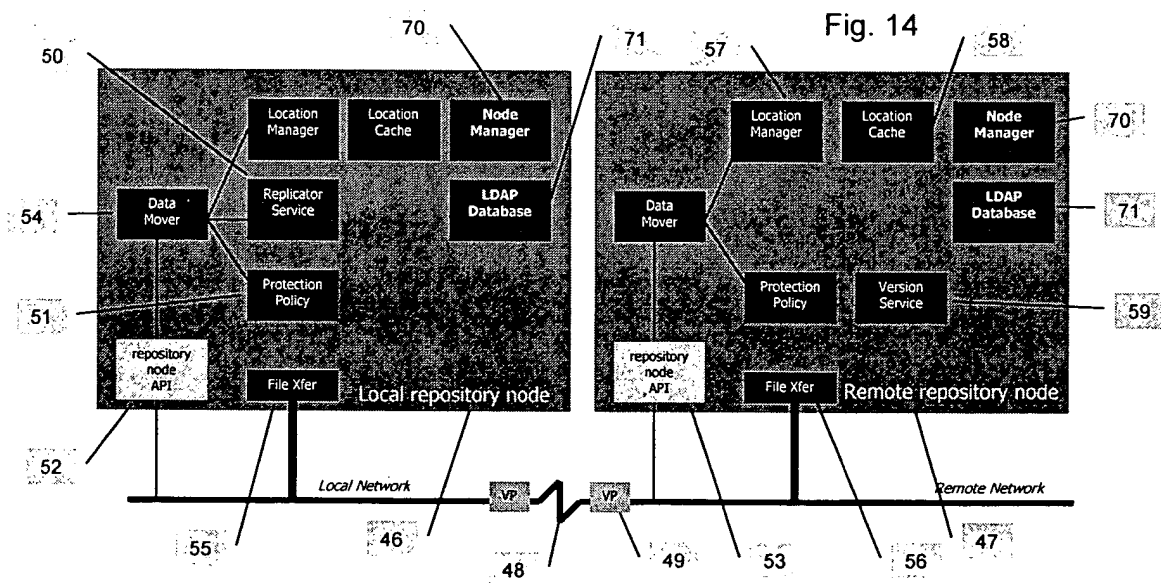
55 46 48 49 53 56 47
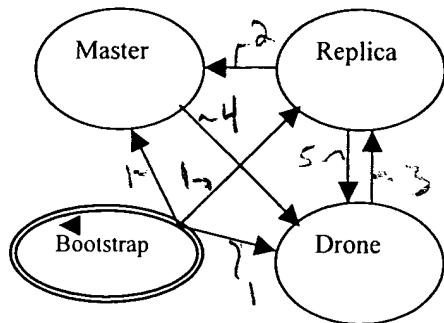
FIG 14: Apparatus that replicates data among repositories

FIG 15: Node Manager Roles and state transitions